

1 **Portable Display, Storage and Transport Case**

2 Cross Reference to Related Parent Application

3 This application is a continuation-in-part of U.S. patent application, serial number
4 09/859,267, filed May 17, 2001, Portable Display and Storage Case, which case claims the
5 benefits under 35 U.S.C. 119(e) of provisional patent application serial number 60/204,921 filed
6 on May 17, 2000.

7 Field of the Invention

8 The present invention relates to the field of portable display cases, and particularly,
9 portable display cases that are durable and lightweight, that are capable of easy placement into
10 multiple arrays, that can be manufactured in a variety of attractive appearances, that can be
11 nested for compact storage and easier transport, that can be stackable for appearance, that can be
12 made fire retardant and that can be used to store and transport the items meant for display.

13 Description of the Prior Art

14 Display cases are well known in the art. Many types and users of display cases exist. One
15 example of their use includes people who display merchandise at trade shows and art fairs. These
16 users must carry their merchandise from show to show and often set up their display cases for
17 only short times. Numerous trade shows, antique fairs, and flea markets are held in the U.S. each
18 year attracting thousands of exhibitors and customers. Exhibitors desire to set up their displays
19 quickly and efficiently and to secure their merchandise from damage. Exhibitors also prefer to
20 have their merchandise attractively displayed. When floor space is expensive or limited,
21 exhibitors wish the best display and layout possible for the space provided and for the items
22 displayed.

1 Some display cases are simply lightweight shelves, which can be modified to create an
2 attractive appearance or to display specific types of merchandise. These provide little security
3 and may not be sufficiently stable to display fragile merchandise. When fashioned to provide
4 stability, they become too heavy for easy travel. Other display cases come in the form of fixed
5 wall cases with a hinged glass or plastic top which lifts up so that objects can be placed in and/or
6 removed therefrom. The tops of these can be locked so that the merchandise within the case is
7 attractively displayed and viewed easily by potential customers. This type of display case is
8 frequently heavy, difficult to transport and provides a limited amount of display area. Larger
9 cases made of glass or other transparent material can provide additional shelves for the display of
10 merchandise but are difficult to move as they are heavy and take up a great deal of space.
11 Furthermore, although these cases can be locked for some level of security, the items contained
12 within remain visible during transport making them prone to “smash and grab” opportunistic
13 theft.

14 Other types of display cases with knock-down construction have been developed. These
15 include those disclosed in U.S. Pat. No. 4,553,680 to Griggs and U.S. Pat. No.5,004,303 to
16 Conway. In such display cases, the top and sides can be separated from one another and the case,
17 once dismantled, is collapsible, taking up much less space. Another display case of knock-down
18 construction is disclosed in U.S. Pat. No. 4,002,233 to Page. While these are generally easy to
19 transport, they don’t provide effective storage capability or security for the displayed
20 merchandise and are perceived as less rigid or permanent and therefore less desirable for heavier
21 merchandise. Furthermore, they necessitate both a break down and set up step for their transport
22 and use; this is inconvenient for users who are traveling to many trade shows.

1 Portable containers or cabinets, including portable or collapsible cabinets, are also
2 known. U.S. Pat. No. 3,580,650 to Morris discloses a portable cabinet structure of molded plastic
3 for housing electronic equipment. These are generally permanent structures, however, and they
4 can be very heavy, reducing their mobility. Furthermore, they can appear to be of poor quality
5 subjecting the merchandise to a bias because of such poor display. When they are made
6 completely of transparent materials, the merchandise is visible while being transported, leaving
7 the merchandise open to opportunistic theft. These containers are often not fire retardant and can
8 cause damage to the displayed merchandise and its surroundings if they are exposed to fire.

9 With the limitations of these designs in place, the invention disclosed herein provides for
10 a portable display case which is permanent and non-collapsible and provides a light weight, a
11 professional appearance, the ability to stack or nest different sized cases together for ease of
12 storage, can be made of fire retardant materials and can store the displayed merchandise securely
13 within the case itself to reduce visibility and reduce the potential for opportunistic theft.

14 Summary of the Invention

15 The instant invention is an improved portable display case for the display of merchandise
16 such as art objects, antiques and the like. It is constructed of lightweight materials for easy
17 transport. The display case can be nested or different sized cases can be placed within one
18 another for improved storage and transport. Several display cases can be stacked to increase the
19 number of possible display arrangements. The display case is constructed to provide long-term
20 storage for merchandise and for security during transport of the merchandise. It provides a
21 professional appearance for merchandise on display. It is made from durable materials to
22 maintain stability and increase lifetime and it is preferably made of fire retardant materials to

1 improve safety. Multiple display cases can be arranged to provide a pleasing setup and to match
2 the dimensions of the display area.

3 Brief Description of the Drawings

4 FIGURE 1 is a cut away side view of the disclosed display case with an art object
5 displayed;

6 FIGURE 2 is a cut away side view of the disclosed display case with an art object stored
7 inside.

8 FIGURE 3 is an exploded side view of the preferred embodiment of the disclosed display
9 case;

10 FIGURE 4 is a side view of a smaller display cases placed in a display case of the next
11 size; and

12 FIGURE 5 is a top view of a molded display case with the covering removed and with
13 another display case stored inside.

14 FIGURE 6 is a cross-sectional view of a dado joint.

15 FIGURE 7 is a cross-sectional view of a rabbet joint.

16 FIGURE 8 is a cross-sectional view of a box within a box design, showing an article
17 within the inner box, and an outercovering around the outer box.

18 Detailed Description of the Invention

19 The invention is a portable display case to professionally display merchandise at trade
20 shows, antique/collectible shows, flea markets, fairs, traveling museums, etc. The display case is
21 a box having a polygon shape, such as a rectangle or a square.

22 In a preferred use, Figure 1 shows a cutaway view of the display case with an art object
23 100 displayed atop. The case is comprised of top 102, front 104, right side 106, rear 108, left side

(not shown) and bottom 110 elements. These elements are composed of a lightweight material such as R5 Styrofoam or other rigid insulating materials. One inch R5 sheeting is preferred for display cases with smaller dimensions while two inch R5 sheeting is preferred for larger display cases. Other sizes of the sheeting are possible. The bottom 110, front 104, rear 108, right side 106 and left side (not shown) elements are permanently attached together using an appropriate securing method applicable to the material of manufacture. These can include adhesives and/or nails or screws to further secure these elements. The top 102 element is removable to expose space for storage of merchandise as shown in Figure 2 or for nesting of one or more smaller display cases. In a preferred embodiment, the top 102 element contains a top cover 112 comprised of a lightweight material such as plywood, wood paneling, plastic laminate or Corian[®] to enhance the stability of the displayed item and to improve the appearance of the display platform. This top cover 112 rests flush along the top edge of the front 104, rear 108, right side 106 and left side (not shown) elements. An optional wall covering 114 of carpet, fabric or another appropriate lightweight material can be added to further enhance the aesthetic appearance of the display case. This wall covering is preferably of a fire retardant material.

The use of the display case to store items is shown in the exploded view of Figure 2. The case contains top 202, front 206, right side 204, rear 208, left side (not shown) and bottom 210 elements as well as the top covering 212 and wall covering 214. The art object 200 is placed inside the case for storage and/or transport. Styrofoam peanuts, paper, bubble wrap or other suitable packing materials can be included inside the display case to further protect the art object 200.

Shown in greater detail in the exploded side view of Figure 3, the display case is comprised of top 308, bottom 316, front (not shown), rear 318 and side 312, 314 wall elements.

1 These elements are composed of a lightweight material such as R5 Styrofoam or other rigid
2 insulating materials. One inch R5 sheeting is preferred for display cases with smaller
3 dimensions, one and one-half inch R5 sheeting is preferred for intermediate sized cases while
4 two inch R5 sheeting is preferred for larger display cases. The top element 308 contains a top
5 cover 310 comprised of a lightweight material such as plywood, wood paneling, plastic laminate
6 or Corian[®] to enhance the stability of the displayed item and to improve the appearance of the
7 display platform. The bottom 316, front, rear 318 and side 312, 314 wall elements are
8 permanently attached together using an appropriate securing method applicable to the material of
9 manufacture. These can include adhesives and/or nails or screws to further secure these
10 elements. The top 308 element with attached top covering 308 is removable to expose space for
11 storage of merchandise or, as illustrated in Figure 4, for nesting of one or more smaller display
12 cases comprised of an appropriately smaller sized top 408, top covering 410, bottom 416, front
13 (not shown), rear 418 and side 412, 414 wall elements within the wall elements 312, 314, 316 of
14 the first display case. Merchandise can be further protected by the addition of tissue, bubble
15 wrap, packing foam, etc. The wall elements of the display case can be of any width applicable to
16 the items being display, for example twenty-two inches and twenty-four inches are common for
17 pottery and stoneware. Heights of the front, rear and side wall elements of the display case are
18 generally less than eight feet, and heights beyond eight feet can require additional reinforcement
19 depending upon the material of manufacture. Heights in the range of four to six feet are common
20 and units can be stacked whereby display cases less than four feet in height can be stacked on
21 other display cases, tables or shelves to achieve an optimal display height. The thickness of the
22 wall elements is dependent on the size of the display case and is generally between one and three
23 inches.

1 In order to improve appearance of the display cases, the front, rear and side wall elements
2 can be covered with carpet or other fabric materials or manufacture in a faux pattern, depending
3 upon the material of manufacture. When carpet or fabrics are used, it is preferable that the
4 materials be fire retardant. These coverings can be secured using adhesives, such as 3M
5 Insulation 78 spray adhesive or Elmers Pro Brand polyurethane glue, or other securing devices
6 such as dry wall nails, dry wall screws or another lightweight nail. The removable top preferably
7 contains a top covering 310 composed of Corian[®], finished plywood, wood paneling or plastic
8 laminate and an interior top section 308, having external dimensions equal or are slightly less
9 than the internal dimensions of the front, rear 318 and side 312, 314 wall elements of the display
10 case. This interior top section 308 is centered and adhered to the bottom side of the top covering
11 310. This interior section 308 prevents the top from being unintentionally slid off the case while
12 the top covering 310 gives the displayed item a stable platform and can provide a visually
13 pleasing display surface. Other methods, such as latches, etc., can be used to secure the top to the
14 side wall elements and will be evident to those skilled in the art.

15 To improve the user's ability to position the display cases and create a desirable overall
16 display, a hook and loop connector such as sold under the trademark Velcro[®], or other means for
17 reversible attaching two or more display cases together, can be added to the wall elements and
18 preferably to the rear wall elements. This can include strips or swatches of Velcro[®], placed so
19 that the display cases can be aligned into a preferred display arrangement and attached together
20 securely to prevent inadvertent movement.

21 In one embodiment, the bottom, front, rear and side wall elements are comprised of one
22 inch thick Styrofoam brand residential foam insulation (Dow) or R5. The front and rear wall
23 elements are approximately twenty-one inches across by four feet high and the side wall

1 elements are approximately twenty-two inches across by four feet high. The bottom wall element
2 is approximately twenty-two inches across on each side and uses roughly a one half inch deep,
3 one inch wide, dado joint approximately one inch from the bottom of the wall elements to
4 connect to the wall elements. A dado is illustrated in FIGURE 6 and is defined as a rectangular
5 groove cut into a board so that a like piece may be fitted into it and as the groove so cut. The
6 definition is from *American Heritage Talking Dictionary*. Copyright © 1997 The Learning
7 Company, Inc.

8 The wall elements are connected by a rabbet connection cut approximately one half inch
9 into the vertical edge of each side, front and rear wall element. A rabbet is illustrated in
10 FIGURE 7 and is defined as a cut or groove along or near the edge of a piece of wood that
11 allows another piece to fit into it to form a join and the joint so made. The definition is
12 excerpted from *American Heritage Talking Dictionary*. Copyright © 1997 The Learning
13 Company, Inc.

14 The dado joint described above is a rectangular channel cut across the face of the wall
15 element. It is commonly used to house the end of an adjoining board. It can also be referred to as
16 a groove depending on whether the cut is with or against the grain of wall elements. Dadoes and
17 grooves are made using the same general techniques. Both offer increased glue surface area over
18 butt joints, help in alignment and provide increased mechanical strength.

19 The rabbet joint described above is essentially an open-sided dado on the edge of a wall
20 element. The resultant notch, or step, is a useful joint for cabinet or box corners, and also serves
21 to house recessed components such as cabinet backs, panels, glass and mirrors. Both rabbet and
22 dado joints are well known in the art and are commonly used for a variety of products.

1 The joint connections are glued together using polyurethane glue or the like. Dry wall
2 nails can be added to hold the assembled wall elements together while the glue dries. These nails
3 can be removed after the glue dries. The external membrane found on the R5 is removed and a
4 spray adhesive, such as 3M insulation 78 or the like, is applied to the outside surface of the front,
5 rear and side wall elements. A fire retardant wall carpet, including Front Runner brand is cut to
6 cover the front, rear and side wall elements and attached. The top element is slab stock made
7 from methacrylate resin and sold under the trademark Corian[®] is cut to match the outside
8 dimensions of the assembled display case. One inch thick, rigid polystyrene foam, commonly
9 called Styrofoam, is centered and glued to the bottom side of the top element such that the outer
10 dimensions of said Styrofoam match the internal dimensions of the assembled bottom, front, rear
11 and side wall elements.

12 In an alternate embodiment, the bottom, front, rear and side wall elements are comprised
13 of two inch thick Styrofoam brand residential foam insulation (Dow) or R5. Equivalent rigid
14 styrene foam blocks, or panels can be used. The front and rear wall elements are twenty-four
15 inches across by five feet high and the side wall elements are fifteen inches across by five feet
16 high. The bottom wall element is twenty-three inches by fifteen inches across on the sides and
17 uses a one and one-half inch deep, one-inch wide dado joint approximately one inch from the
18 bottom of the wall elements to connect to the wall elements. The wall elements are connected by
19 a rabbet connection cut one and one half inches into the vertical edge of each side, front and rear
20 wall element. They are glued together using polyurethane glue or the like. Lightweight screws
21 are added to hold the assembled wall elements together while the glue dries. These screws are
22 removed after the glue dries. A spray adhesive (3M insulation 78) is applied to the outside
23 surface of the front, rear, and side wall elements. The external membrane found on the R5 is

1 removed and a fire retardant wall carpet, cut to cover the front, rear and side wall elements, is
2 attached. The top element is cultured marble cut to match the outside dimensions of the
3 assembled display case. One inch thick Styrofoam is glued to the bottom side of the top element
4 such that the outer dimensions of said Styrofoam match the internal dimensions of the assembled
5 bottom, front, rear and side wall elements.

6 The embodiment illustrated in Figure 5 has been molded into the desired form rather than
7 being designed from sheets glued together. An interior display case 506 has been placed within
8 the exterior display case 502, providing a small clearance 504 between the two display cases.

9 In another embodiment, three display cases are produced using one and one-half inch R5
10 Styrofoam, the first case with external dimensions of twenty-four inches across by five feet high
11 on the sides. The case is assembled as described above. Carpet and plywood are used for the
12 external appearance of the walls and top respectively. The second case has external dimensions
13 of twenty-one inches across by four and three-quarters feet high on the side elements. The case is
14 also assembled as described above. Carpet and plywood are again used for the external
15 appearance. The second case is designed to be stackable on top of or nested inside the first. The
16 third case has external dimensions of eighteen inches across by four and one half feet high on the
17 side elements. The case is assembled as described above. Carpet and plywood are again used for
18 the external appearance. The third case is designed to be stackable on top of or nested inside the
19 second. Additional cases can be stacked as desired and additional designs for stack-ability can be
20 produced such that ease of transport of empty display cases is afforded.

21 Figure 6 shows a dado joint 322 with the dada groove being cut into the bottom panel
22 316. Figure 7 shows a rabbet joint 722 formed in both the bottom and side panels.

1 Alternatively, the rabbet joint can be form in either the bottom panel or the side panel, though the
2 use of a pair of rabbet joints is preferred.

3 Figure 8 illustrates a box-within-a-box design and shows an object 808 within the inner
4 box. The outer covering 800 can be a methacrylate slab, of the type sold under the trademark
5 Corian, or carpeting. In one embodiment the sides can be carpeted and the top formed of
6 plywood or polymeric resin, and in another embodiment, the use of carpeting and a hard surface
7 material can be reversed. The use of a hard surface material on the top 802 of the box is
8 preferred because it provides a superior support surface. The inner box can be of the same
9 design or of an alternate design.

10 The preceding examples are provided for descriptive purposes solely and are not meant to
11 limit the embodiments of the invention. Other configurations of the portable display case will
12 become apparent to those of ordinary skill in the art.